

manganese dioxide ore when dissolved in sulfuric acid.

3. (Amended) The treated manganese dioxide ore of Claim 1, wherein the ratio of the amount of potassium soluble in sulfuric acid to that of manganese contained in the treated manganese dioxide ore by weight is 0.001 or lower.

4. (Amended) The treated manganese dioxide ore of Claim 1, which is prepared by contacting a manganese dioxide ore with a reducing gas at a temperature ranging from 400 to 790° C.

5. (Amended) A treated manganese dioxide ore prepared by immersing the treated manganese dioxide ore of Claim 4 in water having a temperature ranging from 70° C to the boiling point thereof as measured at atmospheric pressure.

6. (Amended) The treated manganese dioxide ore of Claim 1 or 5, which has a particle size of 500 μm or smaller.

7. (Twice Amended) A process for producing the treated manganese dioxide ore of Claim 1, which consists essentially of:

contacting a manganese dioxide ore with a reducing gas consisting of at least one gaseous reducing agent or a combination of at least one gaseous reducing agent diluted with an inert gas, said gaseous reducing agent being selected from the group consisting of hydrogen, carbon monoxide and methane in an amount ranging from 1.0 to 2.0 times the theoretical amount required to reduce the manganese dioxide ore at a temperature ranging from 400 to 790° C, thereby preparing said treated manganese dioxide ore from which manganese sulfate is produced.

8. (Amended) The process for producing a treated manganese dioxide ore of Claim 7, wherein the manganese dioxide ore is pulverized to a particle size of 500 μm or smaller before the reduced ore is obtained therefrom.

9. (Twice Amended) The process for producing a treated manganese dioxide ore of

Claim 7, wherein the manganese dioxide ore is kept in contact with the gaseous reducing agent at a temperature ranging from 400 to 790° C for a necessary period to produce said manganese dioxide ore of which the iron dissolution degree is 70 % or higher by weight when said manganese dioxide ore is dissolved in sulfuric acid.

10. (Twice Amended) A process for producing the treated manganese dioxide ore of Claim 1, which consists essentially of:

contacting a manganese dioxide ore with a reducing gas consisting of at least one gaseous reducing agent or a combination of at least one gaseous reducing agent diluted with an inert gas, said gaseous reducing agent being selected from the group consisting of hydrogen, carbon monoxide and methane in an amount ranging from 1.0 to 2.0 times the theoretical amount required to reduce the manganese dioxide ore at a temperature ranging from 400 to 790° C; and

immersing the reduced ore obtained in water having a temperature ranging from 70° C to the boiling point thereof as measured at atmospheric pressure, thereby preparing said treated manganese dioxide ore from which manganese sulfate is produced.

11. (Amended) The process for producing the treated manganese dioxide ore of Claim 10, which further comprises washing the reduced ore obtained.

12. (Amended) The process for producing the treated manganese dioxide ore of Claim 10, which further comprises washing and then filtering the reduced ore obtained.

16. (Amended) The process for producing the treated manganese dioxide ore of Claim 7, wherein the time period of the contact of the reducing gas with the manganese dioxide ore ranges from 20 to 120 minutes.

17. (Amended) The process for producing the treated manganese dioxide ore of Claim 7, wherein the contact of the reducing gas with the manganese dioxide ore is conducted continuously with a rotary kiln.

18. (Amended) The process for producing a treated manganese dioxide ore of Claim 17, wherein the rotary kiln has a cylindrical or prismatic shape.

19. (Amended) The process for producing a treated manganese dioxide ore of Claim 17, wherein the rotary kiln is equipped with a device for mixing the ore with the reducing gas.

20. (Amended) The process for producing a treated manganese dioxide ore of Claim 19, wherein the device for mixing the ore with the reducing gas comprises one or more movable stirring blades installed in the kiln or one or more stirring blades fixed to the inner wall of the kiln.

21. (Amended) The process for producing a treated manganese dioxide ore of Claim 7, wherein the process is conducted continuously.

22. (Amended) The process for producing a treated manganese dioxide ore of Claim 8, wherein the process is conducted continuously.

23. (Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the process is conducted continuously.

24. (Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the reduced ore is cooled in a nonoxidizing atmosphere and then immersed in water.

25. (Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the reduced ore is immersed in water and then cooled in a nonoxidizing atmosphere. then.

26. (Amended) The process for producing a treated manganese dioxide ore of Claim 24, wherein the reduced ore is continuously cooled.

27. (Amended) The process for producing a treated manganese dioxide ore of Claim 25, wherein the reduced ore is continuously cooled.

28. (Amended) The process for producing a treated manganese dioxide ore of Claim 10,

wherein the immersion of the reduced ore in water is conducted so as to yield a slurry in which the concentration of the reduced ore ranges from 10 to 40 % by weight.

29. (Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the immersion of the reduced ore in water is conducted for a period ranging from 1 to 24 hours.

30. (Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the immersion of the reduced ore in water is conducted in one or more stirring tanks for continuous processing.

32. (Amended) A process for producing electrolytic manganese dioxide which comprises:

adding sulfuric acid to the treated manganese dioxide ore of Claim 1 or 5 to dissolve the ore, thereby preparing an aqueous solution of manganese sulfate;

purifying the aqueous solution of manganese sulfate; and then

subjecting the purified solution to electrolytic oxidation to oxidize the manganese sulfate.

33. (Amended) A process for producing electrolytic manganese dioxide which comprises:

preparing a treated manganese dioxide ore by the process of Claim 7;

adding sulfuric acid to the treated manganese ore to dissolve the ore, thereby preparing an aqueous solution of manganese sulfate;

purifying the aqueous solution of manganese sulfate; and then

subjecting the purified solution to electrolytic oxidation to oxidize the manganese sulfate.

34. (Amended) An electrolytic manganese dioxide which is used in batteries and which is prepared by:

dissolving the treated manganese dioxide ore of Claim 1 or 5 in sulfuric acid, thereby